Applicant Remarks

1. The drawings
    a. Applicant has submitted a replacement drawing sheet that complies with 37 CFR 1.121(d). Please delete all prior drawings. Applicant respectfully requests entry of the replacement drawing.
2. The specification
    a. A substitute specification is submitted that is written in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b). Applicant hereby states that no new matter has been added.
    b. The substitute specification includes Title and Abstract language in response to the office requirement for a shorter length. Applicant has directed both the Title and Abstract language to better summarize the invention.
    c. Applicant respectfully requests entry of the substitute specification.
    d. The specification is shown in clean text after the applicant remarks section.
3. The claims
    a. Applicant has canceled claims 1-9 and submitted new claims 10-17. Applicant has rewritten the claims to better define applicant's invention in language consistent with the Office's requirements. Applicant respectfully requests entry of claims 10-17.
    b. The Office has rejected claims 1-9 for failing to define the invention in the manner required by 35 USC 112, second paragraph. In response, applicant has canceled claims 1-9 and submitted new claims 10-17.
    c. The Office objected to claim 9 under 37 CFR 1.75(c) as being improper form because a multiple dependent claim must refer back in the alternative only. In response, applicant has canceled claim 9 and submitted new claims 10-17.
    d. Claims 1-4 and 8 stand rejected under 35 USC 102(b) as being clearly anticipated by Dall (US 942,486).
        i. Applicant traverses the Office's rejection by the submittal of new independent claim 10.

1. Applicant claims important features that allow the threaded connection between the two portions of the impact rod to be unscrewed. The release cylinder is prevented from rotation by the interaction with the release button. The release cylinder is directly connected to the impact rod and prevents rotation of the impact rod. Without these critical features, the impact rod will not conveniently unscrew and the function of reducing the length of the spring activated cue for storage or transport is not practical for the operator. Dall does not disclose or teach a similar feature. In contrast, Dall's disclosure has no method of preventing the collar or disk (item 22 in Fig. 2 and item 32 in Fig. 4) from rotating.
2. The same design features also provides the ability for the owner to rapidly change cue tips. If the impact rod is prevented from rotating because the release cylinder cannot rotate, the removable portion of the cue tip may be unscrewed from the end of the impact rod. This is an important operating function for the owner. In some situations, the ability to change cue tips is important for a good shot. Also, it allows the operator to quickly change out a cue tip if there is damage.
3. Applicant's claimed trigger method and mechanism is significantly different than the activation method as taught by Dall.
4. Similar to the prior comments just mentioned, Dall does not disclose the function of reducing the length of the pool cue by use of threads. Nor is the cue, as disclosed by Dall, inherently designed for convenient disassembly to accomplish this function.

ii. Applicant submits that, from the above, a *prima facie* case of obviousness according to 35 USC 102(b) is misplaced. Applicant respectfully requests withdrawal of the 35 USC 102(b) rejection.

e. The Office has rejected claims 5-7 Under 35 USC 103(a) as being obvious over Dall (US 942,486) in view of Williams (US 4,231,574).

i. Applicant traverses the Office's rejection by the submittal of new independent claim 10.

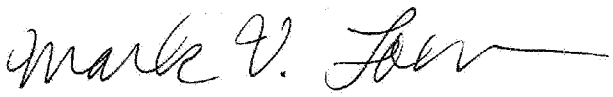
    1. Applicant's claim 10 has an important feature not taught or claimed by a combination of Dall and Williams. Williams discloses the use of a quick coupling connection in relation to a standard pool cue and not the use of a standard threaded connection as claimed by applicant. Also, neither Williams or Dall include teaching for any methods for disassembly of an additional, internal rod as claimed by applicant. As already stated, Dall does not provide for the possibility of disassembly of the internal rod (item 13, Fig. 1) as the rod is free to rotate.
    2. Those skilled in the art would find it physically impossible to combine the references in the manner suggested. A combination of Williams and Dall would not be an operable invention. Williams specifically discloses the use of an internal central stud (item 40, Fig. 3) that is an integral part of the quick connect method. The central stud is a critical item to William's disclosure. Williams, by use of this central stud, along with other items, precludes the possibility of using an internal impact rod as claimed by applicant.

ii. Applicant submits that, from the above, a *prima facie* case of obviousness according to 35 USC 103(a) is misplaced. Applicant respectfully requests withdrawal of the 35 USC 103(a) rejection.

Applicant submits that all matters in the Office action mailed on March 7, 2005 have been addressed and requests entry of the modifications and amendments. For all of the reasons given above, applicant respectfully submits that the errors in the specification are corrected, the errors in the drawings have been corrected, the claims comply with Section 112, the claims define the invention over the cited art under Sections 102 and 103, and the claims are of patentable merit. Accordingly, applicant submits that this application is now in full condition for allowance, which action applicant respectfully requests.

If, after reviewing the above amendments and remarks, the Examiner has any questions, the Examiner is respectfully requested to contact the applicant, by telephone, to discuss such issues or schedule an interview to address such issues.

Respectfully submitted,



Mark V. Loen
Registration number 56,220
Phone (480) 775-5177

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Dominick Cestro	Group Art Unit: 3711
Title: dcs hi tek tate of the art aluminum 3 peice collapsable barell sprung pool cue with adjustable impact rod and tip	Examiner: Mark S. Graham
Serial No.: 10/709,066	
Filed: 04-09-2004	

Mail Stop Amendment
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

May 31, 2006

Attn: Commissioner for Patents

Dear Sir:

Following, applicant submits the substitute specification in clean text including the title and abstract.

Respectfully submitted,

Mark V. Loen

Mark V. Loen

USPTO Registration Number 56,220

Phone (480) 775-5177

TITLE OF THE INVENTION

[0001] Spring Activated Pool Cue Designed for Convenient Storage

CROSS REFERENCE TO RELATED APPLICATIONS

[0002] This application claims the benefit of U.S. Provisional Patent Application Serial Number 60/320,147 filed on 04-25-2003. The entire disclosure is incorporated by reference herein.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARH OR DEVELOPMENT

[0003] Not applicable.

REFERENCE TO SEQUENCE LISTING, A TABLE, OR COMPUTER PROGRAM LISTING

[0004] Not applicable.

BACKGROUND OF THE INVENTION

(1) Field of the Invention

[0005] This invention is directed toward pool cues used in games that are played on a billiard table such as pool, billiards, snooker, and the like. The pool cue of this invention is a hollow shaft wherein a mechanical spring loaded mechanism is activated inside the cue so that the cue tip is projected outward to strike a billiard ball. The striking force may be varied by an adjustment at the end of the cue. The design of the cue looks very similar to a standard pool cue that is manually struck against the billiard ball. The cue is designed to be disassembled for convenient storage and transport.

(2) Description of Related Art

[0006] US Patent Numbers 6,348,006, 5,628,691, 4,949,964, and 4,718,671 all disclose various methods of creating a variable length cue stick. The methods in these patents include screw assembly and telescoping. Various locking methods are disclosed to fix the telescoping length.

[0007] US Patent Number 5,411,441 discloses a cue tip that is spring loaded in connection with a silicone encasement. The goal is to provide additional momentum to the ball when struck.

[0008] US Patent Number 5,299,983 discloses a spring activated cue using a ratchet and pawl. The invention is overly complicated in order to move the cue tip forward and backward, and most of the cue length moves relative to the end which contains the spring actuation mechanism. This makes it difficult for an operator to hold and aim correctly.

[0009] US Patent Number 4,634,123 discloses a spring activated cue using a saw tooth ratchet mechanism that locks the cue tip inside the hollow cue shaft. It is difficult for the operator to know exactly where the cue tip will strike the ball as the cue tip is recessed within the hollow cue.

[0010] US Patent Number 4,526,370 discloses a spring activated cue designed with two pieces: a moving portion and a fixed portion. The moving portion is difficult for the operator to hold steady and strike on the desired ball spot when suddenly activated.

[0011] US Patent Number 4,134,588 discloses a spring activated cue tip for a shorter cue length with an awkward push button and method to vary the striking force. The striking force is restricted to a few select forces and is not continuously adjustable.

[0012] US Patent Number 3,447,805 discloses a spring activated cue. Similar to US Patent Number 4,526,370 the moving portion is difficult for the operator to hold steady and strike on the desired ball spot when activated. Also the striking force is restricted to a few select forces and is not continuously adjustable.

[0013] US Patent Number 1,604,023 discloses a spring activated cue tip with a moving stock piece at the end of the cue. When activated, the device is designed for the cue tip to strike the ball and return to the latched position. To do this, a stock piece at the other end pops out. The

end stock piece is then pressed inward to reset the device. There is additional internal undesirable movement that disturbs the aim of the operator and makes the striking force less predictable.

[0014] US Patent Number 1,182,530 discloses a spring activated cue tip that includes two springs and a gun trigger type of release mechanism. A primary forcing shaft strikes a secondary shaft which is attached to the cue tip. The energy needed to activate the device is set by a sliding collar. The collar is troublesome and the operator must remember to slide it to the proper forward position or the device activation will impact the collar which is liable to hurt the operator's hand. The gun trigger is an unnatural and undesirable way of holding a cue, making the cue awkward to aim.

[0015] US Patent Numbers 673,753 and 673,693 both disclose a spring activated cue. Similar to US Patent Number 4,526,370, the suddenly moving portion is difficult for the operator to hold steady and strike on the desired ball spot when activated. Two springs are used to create the striking energy and also retract the moving portion partially into the fixed portion.

[0016] In addition, in US Patent Numbers 4,634,123, 4,526,370, 4,134,588, and 3,447,805 the adjusting mechanism provides a higher striking force with the longer ball striking movement which is undesirable as a longer cue may contact other balls causing a game violation.

[0017] None of the above disclosed spring activated devices provide for operator convenience in traveling or storage. There has been no consideration for convenient disassembly for a more convenient length suitable for a carrying or storage nor has there been consideration for economic and simplified manufacturability.

BRIEF SUMMARY OF THE INVENTION

[0018] This invention is directed toward a piece pool cue that is designed to strike the cue ball with a cue tip that is spring activated and also overcomes the problems just mentioned with similar devices. The device has also been specifically designed to be taken apart for storage, transport, and easy repair.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0019] Fig. 1 is a general arrangement of the spring activated pool cue as a cross section.

[0020] Fig. 2 is a detail of a release cylinder used in the activation mechanism.

[0021] Fig. 3 is a detail of a retaining ring for the release button.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Figure 1 shows a general arrangement cross section of the pool cue as conceived in this invention. To aid in understanding this general arrangement, the pool cue is made up of the following items:

[0023]

No.	Description
10	Release mechanism cavity
11	Trigger release button spring
12	Trigger release button
13	Release cylinder
14	Barrel spring
15	End plate
16	Threaded rod
17	Threaded bushing
18	Tension adjustment coupler
19	Rear impact rod

20 Stop edge

21 Front impact rod

22 Pin

23 Machined tip

24 End impact tip

25 Threaded connection for cue barrels

26 Threaded connection for impact rods

28 Rear cue barrel

30 Front cue barrel

31 Contact point

33 Barrel taper

35 Drilled opening in rear cue barrel

40 Machined recess

[0024] The cue is made up of two elongated barrels, a front cue barrel 30 and a rear cue barrel 28. Both barrels may be made from materials such as aluminum, titanium, graphite, and wood. A preferred embodiment is to begin with a solid aluminum dowel or billet. The overall length of the cue can vary from a typical four and one half feet long to any length specified by a prospective owner. The barrel outside diameter is preferably 1.25 inches. The barrels are preferably made by drilling length wise with a gun drill bit to bore 1/8 inch hole or a 3/16 inch hole as illustrated to allow the front impact rod 21 and rear impact rod 19 to freely move. A taper 33 is machined on the outside diameter the front cue barrel 30 and rear cue barrel 28 to match existing cue designs. The outside of the barrels can be given a high quality machined or polished finish.

[0025] It should be noted that Fig. 1 is not drawn to scale. The length is shortened for the sake of showing the important features of the invention.

[0026] The front cue barrel 30 and rear cue barrel 28 are carefully machined so that they can be screwed together by male and female threads 25 near the middle of the overall cue length. The machining must be done carefully to ensure that the mating surfaces keep the overall cue assembly straight.

[0027] The rear cue barrel 28 is also drilled or machined out, preferably to 5/8 inches in diameter and 4 to 6 inches deep, to allow the barrel spring 14 and release mechanism assembly to be inserted into the cue. A stop edge 20 illustrates where the diameter changes. The end diameter of the rear cue barrel 28 is also machined to allow room for the tension adjustment coupler 18 to be assembled.

[0028] The rear cue barrel 28 is also drilled out 35, preferably to 3/8 inches in diameter and just deep enough to allow the trigger release button 12 and the trigger release button spring 11 to be inserted. A spring release mechanism cavity 10 is created inside the rear cue barrel 28 by the machining and drilling.

[0029] The barrel spring 14 and release mechanism assembly is designed to provide for continuously variable energy storage in the barrel spring and provide for a fixed stroke length for striking a billiard ball.

[0030] The energy stored in the barrel spring 14 is adjusted by an assembly of four parts. A threaded rod 16 is firmly fixed to a threaded tension coupler 18 and an end plate 15 so that they all rotate together. A threaded bushing 17 is fixed to the end of the rear cue barrel 28 by a pin or other means. When the tension adjustment coupler is turned, the threaded rod 16 turns inside the threaded bushing 17 and causes the end plate 15 to move and compress the barrel spring 14.

This assembly provides for a continuously variable amount of stored energy. The stiffness of the spring may be designed to the preference of the owner.

[0031] The trigger release assembly consists of three important parts. A trigger release button 12 is inserted in the rear cue barrel and also in a release cylinder 13. A trigger release button spring 11 is under the trigger release button 12. The mechanism is shown in the locked position with spring force being applied to the trigger release button.

[0032] When the trigger release button 12 is pressed into the rear cue barrel 28, the contact 31 between the trigger release button 12 and the release cylinder 13 is removed and the release cylinder 13 then slides forward until the stop edge 20 prevents movement. The trigger release button 12 is machined to a shape that matches slots in the release cylinder 13 to allow the motion to occur. The trigger release button spring 11 helps to prevent unwanted activation of the pool cue by keeping the trigger release button 12 in the locked position until activated by the owner. It also provides for a convenient re-locking action on the trigger release button 12 when getting ready for the next pool shot.

[0033] A machined recess 40 on the release cylinder 13 provides support for the barrel spring 14 and optionally includes room for a washer to ensure a smooth turning for the barrel spring 14 when the spring compression is adjusted.

[0034] When the release cylinder 13 is allowed to slide forward, it then pushes the rear impact rod 19 forward. The rear impact rod 19 is firmly threaded into the release cylinder 13. The rear impact rod 19 is connected to a front impact rod 21 by a threaded connection 26. The front impact rod 21 is connected to a machined tip 23 which is attached by a pin 22 or other means. The machined tip 23 is then attached to an end impact tip 24 which will actually strike the billiard ball. The attachment design for the end impact tip 24 may be by glue, threading, press

fit, or other mounting means. The end impact tip 24 may be a typical material used in pool cues as desired by the owner. The attachment may include the use of a knurled or threaded hole. Various designs may be used that allow a quick change.

[0035] The pool cue may be disassembled for storage by first unscrewing the front impact rod 21 and then unscrewing the front cue barrel 30. The rear impact rod 19 is prevented from rotating because the release cylinder 13 is prevented from rotating by the trigger release button 12.

[0036] The pool cue is reset for the next shot merely by pushing the impact rods and tip assembly back into the cue. The trigger release button spring 11 pushes the trigger release button 12 into the locked position and which holds the cue ready for the next shot.

[0037] Fig. 2 shows a detail of the release cylinder 13 in a view in the same direction as the release button motion. An enlarged eyehole 39 is designed to engage a larger diameter of the trigger release button 12 and provide a smaller diameter slot 32 that will slide past the trigger release button 12 when the invention is activated.

[0038] Fig. 3 shows an additional important detail that is omitted in Fig. 1. A machined aluminum retainer ring 41 is added to the outside diameter of the rear cue barrel 28. It slides over the length of the cue in the direction as illustrated to lock the trigger release button 12 inside the rear cue barrel 28 and prevent it from falling out. The retainer ring 41 has an outside diameter small enough to allow the trigger release button 12 only enough motion to perform its function and not spring out.

[0039] In general, the cue can be modified as per the desires of the owner. The overall design provides for the use of a variety of materials. Also the cue exterior may be modified by various paints, surface textures, anodizing, and knurling.

[0040] This invention lends itself very readily to the use by persons with handicaps or disabilities.

[0041] This invention may be adapted in length to fit for use by the preference or need of the owner.

[0042] This cue barrels have been designed, in a preferred embodiment, to be made by the use of standard machining techniques from an aluminum dowel or billet. This allows the customization of the cue to the length, surface texture, and appearance specified by an owner.

[0043] While various embodiments of the present invention have been described, the invention may be modified and adapted to various similar pool cues to those skilled in the art. Therefore, this invention is not limited to the description and figure shown herein, and includes all such embodiments, changes, and modifications that are encompassed by the scope of the claims.

ABSTRACT OF THE DISCLOSURE

A spring activated pool cue is disclosed for use in games such as billiards. The device has also been designed to be taken apart for convenient storage and transport.